

[0082] What is claimed is:

1. An apparatus comprising:

a variable acoustic source acoustically coupled to a volume, the volume being divided into an air region and a fluid region, the fluid region having a fluid output;

a microphone acoustically coupled to the volume;

a first processor configured to receive a signal from the microphone, and further configured to determine a volume of the air region;

a fluid valve configured to allow an amount of fluid to exit the fluid region, the amount of fluid being associated with the determined volume of the air region; and

an atomizer coupled to the fluid output, the atomizer configured to aerosolize at least a portion of the amount of fluid to exit the fluid region..

2. The apparatus of claim 1, further comprising a volume sensor configured to output a first signal associated with a volume of the aerosol, and wherein the amount of fluid to exit the fluid region is further associated with the signal associated with the volume of the aerosol.

3. The apparatus of claim 1, further comprising a second processor configured to calculate a volume of the aerosolized fluid and configured to output a volume signal associated with the calculated volume, and wherein the amount of fluid to exit the region is further associated with the volume signal.

4. The apparatus of claim 2, further comprising a second processor configured to receive the first signal, calculate a volume of the aerosolized fluid, and output a second signal associated with the calculated volume, wherein the amount of fluid is further associated with the second signal.
5. The apparatus of claim 1, wherein the first processor is further configured to send a control signal to the fluid valve.
6. The apparatus of claim 5, further comprising:  
a target region coupled to the fluid valve and in selective communication with an air tank through an air valve.
7. The apparatus of claim 6, wherein the first processor is further configured to send a control signal to the air valve.
8. An apparatus comprising:  
a first processor configured to calculate an aerosol volume and to output a volume signal associated with the calculated aerosol volume;  
a second processor configured to  
receive an acoustic signal representing an acoustic property of a volume;  
calculate, using the received acoustic signal, a quantity associated with a first fluid volume;

receive the volume signal from the first processor; and  
output a signal for controlling a valve, the output signal being associated  
with the received acoustic signal and with the received volume signal.

9. The apparatus of claim 8, wherein the valve is in communication with an  
atomizer.

10. The apparatus of claim 9, further comprising:

a light source and light detector, the detector configured to output a signal  
associated with light scattering from the aerosol;

a configured to output a signal associated with a flow rate of the aerosol; and

wherein the calculation of the aerosol volume is associated with the output  
signal from the light detector and with the output signal from the pressure sensor.

11. A method comprising:

receiving an acoustic signal representing an acoustic property of a volume;

calculating, using the received acoustic signal, a quantity associated with a first  
fluid volume;

receiving a volume signal; and

outputting a signal for controlling a valve, the output signal being associated with  
the received acoustic signal and with the received volume signal.

12. A medium storing instructions to cause a processor to:
  - receive an acoustic signal representing an acoustic property of a volume;
  - calculate, using the received acoustic signal, a quantity associated with a first fluid volume;
  - receive a volume signal a first processor; and
  - output a signal for controlling a valve, the output signal being associated with the received acoustic signal and with the received volume signal.
13. An apparatus comprising:
  - means for dispensing a first fluid;
  - means for aerosolizing the first fluid in communication with the means for dispensing the first fluid; and
  - means for determining aerosol volume coupled to the means for aerosolizing the first fluid.
14. The apparatus of claim 13, wherein the means for dispensing the first fluid includes an acoustic volume transducer.
15. The apparatus of claim 14, wherein the means for dispensing the first fluid includes a means for metering a second fluid based on the signal associated with the aerosol volume, and further based on an acoustic property of the means for dispensing the first fluid.

16. A method comprising:
  - calculating a plurality of acoustic resonances associated with a variable-volume chamber;
  - calculating a volume of the variable-volume chamber, the calculated volume being associated with at least one of the plurality of acoustic resonances;
  - receiving an aerosol volume signal associated with a volume of an aerosol; and
  - outputting an amount of fluid, the amount of fluid being associated with the aerosol volume signal and with the calculated volume of the variable-volume chamber.
17. A medium storing instructions to cause a processor to:
  - calculate a plurality of acoustic resonances associated with a variable-volume chamber;
  - calculate a volume of the variable-volume chamber, the calculated volume being associated with at least one of the plurality of acoustic resonances;
  - receive an aerosol volume signal associated with a volume of an aerosol; and
  - output an amount of fluid, the amount of fluid being associated with the aerosol volume signal and with the calculated volume of the variable-volume chamber.
18. A method comprising:

metering a first fluid using an acoustic volume transducer;  
converting the first fluid to an aerosol; and  
outputting the aerosol.

19. The method of claim 18, further comprising:  
calculating a volume of the aerosol;  
receiving a signal associated with the calculated volume; and  
metering a second fluid using an acoustic volume transducer, the metering  
being based on the received signal.
20. A medium storing instructions to cause a processor to:  
meter a first fluid using an acoustic volume transducer;  
convert the first fluid to an aerosol; and  
output the aerosol.
21. The medium of claim 20, storing further instructions to cause a processor to  
calculate a volume of the aerosol;  
receive a signal associated with the calculated volume; and  
meter a second fluid using an acoustic volume transducer, the metering being  
based on the received signal.
22. A method comprising:

calculating a volume of the variable-volume chamber, the calculated volume being associated with an acoustic property of the variable-volume chamber;  
receiving an aerosol volume signal associated with a volume of an aerosol; and  
outputting an amount of fluid, the amount of fluid being associated with the aerosol volume signal and with the calculated volume of the variable-volume chamber.

23. The method of claim 22, wherein the acoustic property of the variable-volume chamber is an acoustic resonance of the variable-volume chamber.

24. The method of claim 22, wherein the acoustic property of the variable-volume chamber is an amplitude of an acoustic wave in the variable-volume chamber.

25. A medium storing instructions to cause a processor to:

calculate a volume of the variable-volume chamber, the calculated volume being associated with an acoustic property of the variable-volume chamber;  
receive an aerosol volume signal associated with a volume of an aerosol; and  
output an amount of fluid, the amount of fluid being associated with the aerosol volume signal and with the calculated volume of the variable-volume chamber.

26. The method of claim 25, wherein the acoustic property of the variable-volume chamber is an acoustic resonance of the variable-volume chamber.

27. The method of claim 25, wherein the acoustic property of the variable-volume chamber is an amplitude of an acoustic wave in the variable-volume chamber.